



A6. Monitoring, Assessment, and Performance Measures

Attachment 6 describes the performance measures that the Projects will use to quantify and verify Project performance with respect to Project benefits and objectives. This attachment states where the data will be collected, types of analyses used, and how monitoring data will measure the performance in meeting the goals and objectives of the IRWM Plan. A table is provided for each Project that addresses Project goals, desired outcomes, output indicators (measures to effectively track output), outcome indicators (measures to evaluate change that is a direct result of the work), measurement tools and methods, and targets (measurable targets that are feasible to meet during the life of the Proposal).

The Santa Barbara County IRWM Planning Grant proposal describes how the region intends to set up a new Data Management System that will establish a process of data collection, storage, and dissemination to IRWM participants, stakeholders, the public, and the State. Monitoring, assessment and performance data will be made available through the Data Management System when appropriate.

Currently, Santa Barbara County maintains existing water resources-related and IRWM-related data on the Santa Barbara County Water Agency website located at: <http://www.countyofsb.org/pwd/water/index.htm>. This site also provides the forum for sharing of reports, public meeting dates, agendas, meeting minutes, and annual reports. Data generated by IRWM implementation activities will be integrated into existing State databases.

PROJECT 1:

City of Lompoc, Lompoc Valley Leak Detection and Repair Project

Project 1: City of Lompoc, Lompoc Valley Leak Detection and Repair Project

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the City of Lompoc (Lompoc), Lompoc Valley Leak Detection and Repair Project (Project 1 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of this section is to provide information that will be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures


Exhibit 6.1-1 provides a summary of monitoring, assessment, and performance measures for Project 1. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

EXHIBIT 6.1-1

Project 1 Summary of Monitoring, Assessment, and Performance Measures

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Reduce lost water	Produce and treat less water; save energy	Amount of water produced vs. amount of water delivered	Unaccounted-for water percentage	Unaccounted-for water report; metered sales compared to volume of treated water introduced into delivery/distribution system	The target is to lower the percentage of unaccounted-for water by more than 50% for Mission Hills Community Services District (MHCSD) and Vandenberg Village Community Services (VVCSD) and to reduce Lompoc's unaccounted-for water by 17% and to maintain that percentage with a proactive leak detection and repair program.

The output indicator (that is, the amount of water produced vs. amount of water delivered) will effectively track the Project performance and the output of the Project. For the first 2 to 5 years, quarterly water production will be compared to water sales to determine reduction in water leaks. These indicators are adequate to evaluate change in water quantity resulting from this Project. The change in percentage of leaks will be determined by comparing water production to water sales and unaccounted-for water.

Consistency with Basin Plan

The Project is consistent with the Water Quality Control Plan for the Central Coastal RWQCB Basin (Basin Plan) in that it improves water quality. The objective of the Basin Plan is to show how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible.

It is anticipated that the Project targets will be met within the life of the proposal. The agencies plan to have a majority of the leaks repaired within 5 years and priority leaks completed within 2 to 3 years.

Monitoring Plan

To assure efficacy of the leak detection and repair effort, each water utility will recheck the site of the leak to make sure leaks are truly fixed. The results will be measured by the number of leaks detected, the leak locations, and reduction of water loss which will be reported to the state.

Exhibit 6.1-2 provides a summary of the monitoring plan including the following:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Quality control of data
- Reviewing data with the monitoring compliance protocol per schedule of the implementation of the Project

EXHIBIT 6.1-2

Project 1 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitoring parameters	Comparing water production to water sales and determining amount of unaccounted-for water (leaks). Customer leaks have been monitored; however, systemwide leak detection in the three water utilities has not occurred before this Project.

EXHIBIT 6.1-2

Project 1 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Measures to remedy or react to problems encountered during monitoring.	Electronic leak survey listening equipment will be used to determine if there are leaks in the water mains, water service lines, and accessible points, such as fire hydrants and valves. If leaks are found, leak correlation equipment will be used to help identify the leaks. A priority schedule will be developed for the leak repair.
Location of monitoring (indicate the locations where the data will be collected)	The water mains and water service lines and other areas listed above.
Monitoring frequency	Water utilities will complete a leak detection survey in the entire water service area and then go back quarterly or semi-annually to determine if leaks are completely gone.
Frequency of evaluation/analysis of performance measures	The evaluation and analysis of performance measures will be conducted quarterly during the leak detection survey.
Monitoring protocols/ methodologies, including who will perform the monitoring.	A leak detection company will identify the leaks. The staff of the three water districts will repair the leaks beginning with the highest volume leaks.
Data Management System	A report will be prepared by the leak detection company, and then each water district will prioritize leak repair and continue to check in high leak areas.
Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame.	The three participating water districts have included leak detection repair in their budgets. The districts will prioritize leaks to be fixed and set a 5-year schedule for leak repair.

Map of Monitoring Locations

There are no monitoring locations for this Project, because the water mains that will be checked for leaks are located on every street and alley in all of the services areas. Maps of each service area showing water mains are included in Appendix 3-1 of Attachment 3, Work Plan.

PROJECT 2:

City of Santa Maria, Untreated Water Landscape Irrigation Project

Project 2: City of Santa Maria Untreated Water Landscape Irrigation Project

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the City of Santa Maria (City), Untreated Water Landscape Irrigation Project (Project 2 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of this section is to provide information that would be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures

Exhibit 6.2-1 provides a summary of monitoring, assessment, and performance measures of Project 2. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:



- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

The output indicators (for example, groundwater nitrate concentrations in terms of water quality) will effectively track the Project performance and the output of the Project. After modifications to or changes in connections, verification will be conducted to ensure the disconnection from domestic water supply and connection to secondary system. The outcome indicators are achieved through sampling result analysis comparing against increasing system reliability. The nitrates found in quarterly water sampling should decrease, and system reliability is anticipated to be enhanced given less reliance on state water project (SWP) water. Specific outcome can be measured by the amount of acre-feet for large landscape areas that is switched to irrigation by groundwater. These indicators are adequate to evaluate changes in water quality resulting from this Project.

EXHIBIT 6.2-1

Project 2 Summary of Monitoring, Assessment, and Performance Measure

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measure-ment Tools and Methods	Targets
 <p>Convert landscape meters from domestic supply to untreated groundwater supply.</p>	Modify/change new connections and install sufficient meters to transfer from 160 AFY to secondary system.	Verify that the conversion from the potable system to untreated system has been made successfully. This is done by testing concentration of fluoride and/or chlorine, which is present at greater than 0.5 mg/L in the potable water system and less than 0.5 mg/L in the untreated system.	Compute increase in use of untreated groundwater supply.	Meter readings from converted accounts.	The target is to convert 160 AFY from the potable water supply to the untreated supply.
 <p>Reduce nitrate levels in groundwater</p>	Remove nitrate from the groundwater; reduce fertilizer use. Location of monitoring will occur at well site 5H on a quarterly basis.	Analyze groundwater for nitrate concentration in areas of new users and from monitoring users of new irrigation sites.	Calculate nitrate extracted in lbs/yr by multiplying the nitrate concentration of the groundwater by the total water supply used for the secondary system; calculate avoided use of nitrate.	Meter readings from converted accounts; nitrate analysis from untreated groundwater supply and from monitoring users of new irrigation sites.	Extract a minimum of 19,000 lbs nitrate (as nitrate) from the groundwater supply each year (Assumes 160 AFY converted and water supply nitrate at 50 mg/L as nitrate).

AFY = acre-feet per year

mg/L = milligrams per liter

Consistency with Basin Plan

The Project is consistent with the Basin Plan in that it does not negatively impact water quality. The objective of the Basin Plan is to show how the quality of the surface- and groundwaters in the Central Coast Region should be managed to provide the highest water quality reasonably possible.

Irrigation of turf with untreated groundwater supplies will match water quality to water use and remove nitrates from groundwater through plant root uptake. This will help address salt and nutrient issues in the Santa Maria Valley watershed, which is impacted by both chloride and nitrate per the Central Coast RWQCB Basin Plan, and will be an element of the salts and nutrients management plan for the Santa Maria Valley.

Monitoring Plan

Quarterly nitrate sampling will be conducted by the City, which will involve collecting samples from the well and forwarding the samples to a certified lab.

Exhibit 6.2-2 provides a summary of the monitoring plan including the following:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Quality control of data
- Reviewing data with the monitoring compliance protocol per Project implementation schedule

EXHIBIT 6.2-2

Project 2 Summary of Monitoring Plan

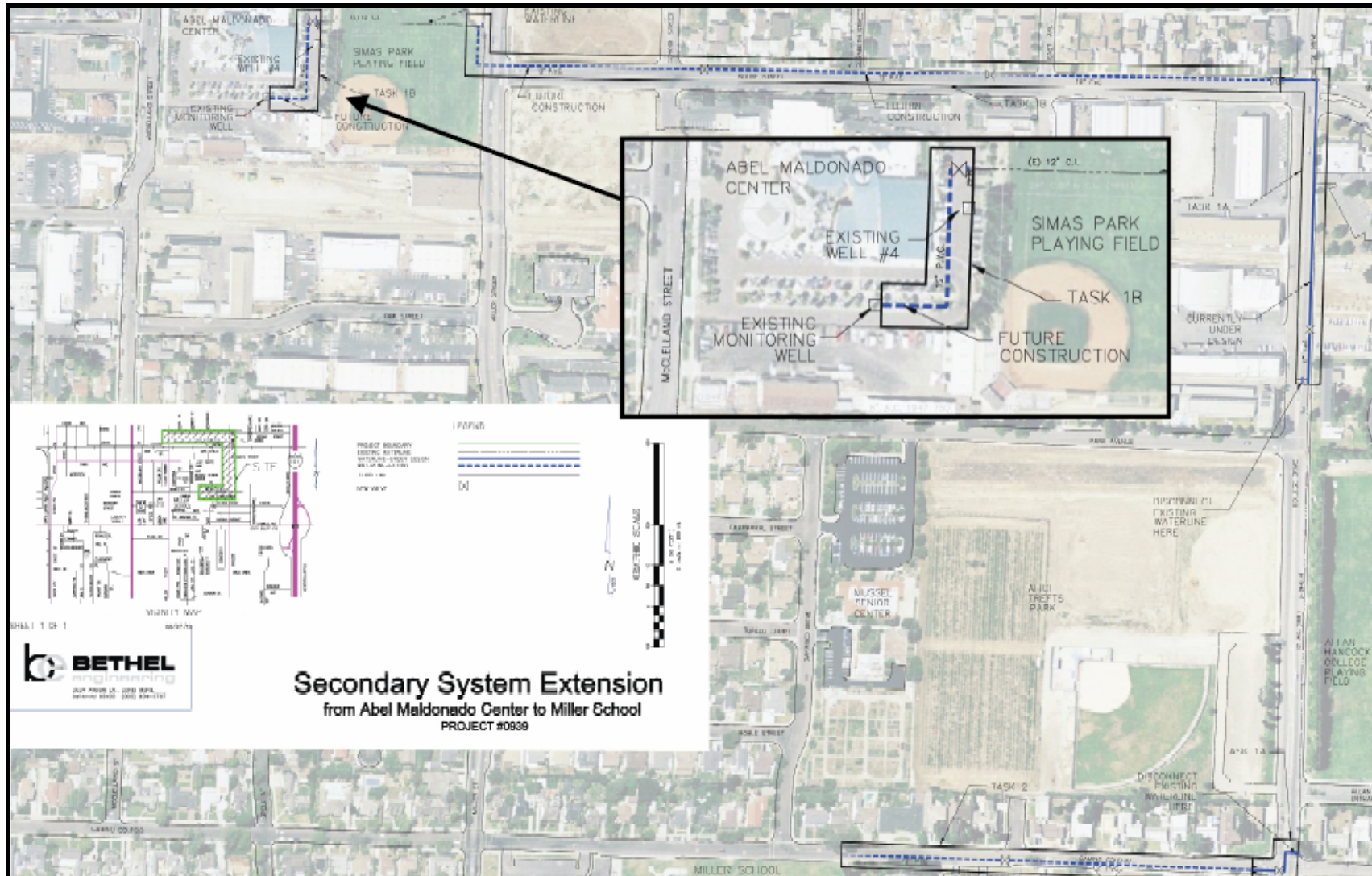
Monitoring Plan Features	Monitoring Plan Details
Monitored parameters	Nitrates in terms of water quality on quarterly basis. There are no species impacts from this Project.
Measures to remedy or react to problems encountered during monitoring	Remedies to potential monitoring problems would involve consultation with the RWQCB to ensure regulatory standards are met.
Location of monitoring	Location of monitoring will occur at well site 5H on a quarterly basis, as shown in Exhibit 6.2-3.
Monitoring frequency	Monitoring will occur on a quarterly basis.
Frequency of evaluation/analysis of performance measures	Evaluation will be conducted on a quarterly basis after monitoring.
Monitoring protocols/ methodologies, including who will perform the monitoring	Monitoring will be conducted by in-house staff (Water System Operators) gathering the samples and forwarding to a certified lab. Online sampling is not warranted due to infrequent nitrate concentration changes. Project performance will be verified through a comparison of historical and present data.
Data Management System	Data from Well 5H will be logged in Excel spreadsheets by the City Water Resources Manager.
Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame	The City Water Resources Manager will ensure that the monitoring schedule is maintained and ongoing and keep records of monitoring results. These results will be included in quarterly and yearly submittals as required by the grant agreement. This is required by the RWQCB to maintain the waste discharge permit.

Map of Monitoring Locations

The Project monitoring location is at Well 5H, the active production well for the irrigation system, which is located at the Civic Center in the top left corner of Exhibit 6.2-3.

EXHIBIT 6.2-3

Project 2 Monitoring Location Map



PROJECT 3:

City of Santa Maria, LeakWatch Project

Project 3: City of Santa Maria, LeakWatch Project

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the City of Santa Maria (City), LeakWatch Project (Project 3 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of this section is to provide information that would be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures

Exhibit 6.3-1 provides a summary of monitoring, assessment, and performance measures of Project 3. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

EXHIBIT 6.3-1

Project 3 Summary of Monitoring, Assessment, and Performance Measure


Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Reduce overall water use and purchases of SWP water	Reduce residential leaks; save up to 210 AFY from Project	Track real-time water consumption and number of leaks detected	Amount of water saved compared to historical records by area	Water use/ reductions in use per customer or meter and annual water loss reports. In other words, water produced vs. water consumed.	Water use reduction in increments of up to 8 AFY after year 10 of Project

EXHIBIT 6.3-1

Project 3 Summary of Monitoring, Assessment, and Performance Measure

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Reduce operational costs	Up to \$96,500 per year savings at full implementation	Manual meter reading savings; vehicle cost savings; customer service efficiency savings	Reduction in the number of hours in the field; fuel savings and other vehicle costs; ability to more efficiently perform rereads, transfers, and water audits	City budget operating cost reductions noted in quarterly financial reports	Estimate is \$96,500 a year savings upon full implementation
 Reduce energy costs	Avoids lifetime pumping and supply costs (\$405,549)	Review of fuel costs	Reduction in fuel costs	City budget operating cost reductions noted in quarterly financial reports	Reduce lifetime pumping and supply costs up to \$405,549
 Reduce per capita use	Reduction of approximately 2 gallons per day	Tracking of real-time consumption	Review of historical consumption reports compared to current data	Water saved vs. water consumed	Up to 2 gallons per day at full implementation
 Improve water quality	1 mg/L reduction of TDS	Water quality sampling	Review of historical sampling records compared to current data	Same as previous column	1 mg/L reduction of TDS at full implementation
 Assist water contingency planning	Provide tool to ensure water rations are achieved	Real-time water meter reading	Consumption is equivalent water contingency reduction goals	Real-time water meter reading	Water contingency goals are met

The output indicators, (for example, reduction of leaks/water loss), will effectively track the Project performance and the output of the Project. The reduction in leaks will reduce the overall amount of water supplied to customers and result in savings in water

purchases. The outcome indicators (for example, routine queries of the database) will indicate leakages as well as the output resolutions quantifying the AFY saved to effectively track output of the Project. Understanding the decreased levels of water loss over a 6-week period as previously tracked (from the time the meter was read to the time the customer receives their bill and notices higher usage) compared to real-time meter reading will provide critical and quantifiable information documenting Project success.

Consistency with Basin Plan

This Project is consistent with the Basin Plan. The RWQCB requires beneficial uses of water supply within the basin. Controlling water loss achieves that goal. The Pilot Program demonstrates that the meters installed to date are functioning correctly with a 99 percent success rate. Based on the documented successful results from the pilot program, it is feasible to meet the targets of the Project within the life of the proposal.

Monitoring Plan

Exhibit 6.3-2 provides a summary of monitoring plan including the following:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Quality control of data
- Reviewing data with the monitoring compliance protocol per schedule of the implementation of the Project

EXHIBIT 6.3-2

Project 3 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitored parameters	Reduction of leaks/water loss.
Measures to remedy or react to problems encountered during monitoring.	Follow up with customers involving water audits and conservation materials that explain how to tell if your water meter is registering correctly.
Location of monitoring	Not applicable.
Monitoring frequency	Evaluation and analysis of performance measures will occur weekly.
Frequency of evaluation/analysis of performance measures	The evaluation/analysis of performance measures will occur weekly.
Monitoring protocols/methodologies, including who will perform the monitoring	Determine water use versus before Project. Water Resources staff will perform the monitoring.

EXHIBIT 6.3-2

Project 3 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Data Management System	Data will be recorded and tracked in a Microsoft Excel spreadsheet.
Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame	Meter data will be reviewed weekly, and water distribution staff will be assigned to alert supervisors as to any additional staffing or equipment resources needed. The Business Services Manager will track finances to ensure all fiscal resources remain in place.

Map of Monitoring Locations

There are no monitoring locations for this Project because there are thousands of water meters, as shown in the Project map(s) provided in Attachment 3, Work Plan. The efficacy of the Project will be assured by the follow-up to confirm that the newly installed transmitter is registering on the computer and that the data is being received electronically.

PROJECT 4:

City of Goleta, San Jose Creek Capacity Improvement and Fish Passage Project

Project 4: City of Goleta San Jose Creek Capacity Improvement and Fish Passage Project

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the City of Goleta (City), San Jose Capacity Improvement and Fish Passage Project (Project 4 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. Information from this section can be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures

Exhibit 6.4-1 provides a summary of monitoring, assessment, and performance measures of Project 4. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. This section provides information on the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

The removal of 4,250 linear feet of barrier to fish passage will open up access to 3.24 miles of spawning habitat upstream. Volunteers will count fish to document fish movement, and a web cam will be installed to allow anyone to view the fish passage channel at any time during daylight hours. This output indicator will effectively track output of the Project. The indicators are adequate to evaluate change resulting from the Project.

EXHIBIT 6.4-1

Project 4 Summary of Monitoring, Assessment, and Performance Measure




Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 <p>Contain the 100-year storm flow</p>	The new channel will contain the 100-year storm flow	Stream gauges and a web cam will be installed; if the channel does not overflow and the parcels do not flood, then the goal has been reached. FEMA is requiring extensive modeling and testing ensuring the effectiveness of the channel prior to issuing a CLOMR.	FEMA concurrence and CLOMR new flood plain boundaries	Stream gauges at various locations including within and upstream of the channel	Channel contains the 100-year storm flow

EXHIBIT 6.4-1

Project 4 Summary of Monitoring, Assessment, and Performance Measure

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Remove 200 parcels from the flood plain.	No damage to business or personal property	No damage to business or personal property in Old Town area during flood events	FEMA will ultimately issue a Letter of Map Revision, or LOMR that will redraw the flood plain boundaries.	Property damage reports or claims	N/A
 Remove the current barrier to fish passage and create a fish passage channel that will allow migrating steelhead to swim upstream to spawn.	Provide fish passage in 5 to 600 cfs flow range	The number of steelhead viewed swimming up and downstream as well as an increase in trout population in upper reaches of stream	An increase in steelhead swimming upstream and the presence of the appropriate flow regimes for migrating steelhead	Visual siting of measureable increased number of steelhead swimming up San Jose Creek past the channelized section. Automated flow gauges will confirm that the flow regimes are appropriate for migrating steelhead and spawning fish adjusting where needed by modification of channel weirs and other attachments.	A measurable increase in steelhead swimming up San Jose Creek past the channelized section. Visually confirming that the flow regimes are appropriate for migrating steelhead and spawning fish, adjusting where needed by modification of channel. ¹

cfs = cubic feet per second

CLOMR = Conditional Letter of Map Revision

LOMR = Letter of Map Revision

¹Presently, fish cannot swim up the channel except under the perfect confluence of storm flow and duration. Fish have been observed swimming upstream under those conditions. The removal of the barrier is sufficient to declare notable progress. The Stoecker Report rates this creek as critical to the survival of the steelhead species. This report, which is relied upon by the California Department of Fish and Game, is included in Appendix 3-4 of Attachment 3, Work Plan.

Consistency with Basin Plan

The Project is consistent with the Basin Plan in that it will improve the quality of the surface water entering the San Jose Creek, Goleta Slough, and Pacific Ocean. The improved water quality will affect the estuarine ecosystem. The improved water quality and flow also will support habitat for the survival and successful maintenance of the endangered species steelhead trout, and support habitat for migration of anadromous fish.

Project 4 will improve the quality of creek water flowing to Goleta Slough through a series of Project elements. The existing concrete channel has exacerbated high bacteria and nitrate levels problems because it impedes natural biological activity (that is, provides opportunity for substances to be filtered out prior to reaching Goleta Slough, Goleta Beach and ultimately the Pacific Ocean). The Project has incorporated an articulated concrete revetment bottom for the channel, which will allow for a more natural filtration process of runoff, especially during low-flow events. In addition, the small grasses that will sprout between the revetments will absorb nitrates in the runoff before they can reach the slough. Consequently, the level of contaminants in the Goleta Slough will be reduced. Flooding impacts sustained on nearby agricultural and industrial areas also will be reduced.

It is feasible that the Project targets will be met within the life of the Proposal. Flood benefits will be immediate. The channel is designed to meet FEMA requirements, so the LOMR will be issued when the Project is complete. This will generate immediate benefits by saving property owners and renters many thousands of dollars each year in insurance premiums. As for fish passage, the fish passage component was designed by Ed Zapel, an expert in the field of steelhead fish passage, under the oversight of the National Oceanic and Atmospheric Administration (NOAA) and the California Department of Fish and Game (CDFG). Representatives from these agencies witnessed the testing of the physical model, and helped to define the parameters.

Monitoring Plan

Exhibit 6.4-2 provides a summary of monitoring plan including the following:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Quality control of data
- Reviewing data with the monitoring compliance protocol per schedule of the implementation of the Project

EXHIBIT 6.4-2

Project 4 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitored parameters	<p>Conductivity Water Temperature pH Turbidity Dissolved O₂ Total Coliform E. coli Nitrate Phosphate Trash</p>
Measures to remedy or react to problems encountered during monitoring	<p>There are permit requirements that must be followed, including pre-construction surveys, and environmental monitoring. Instructions will be given to construction workers by the monitors in the form of tailgate meetings to prevent unintended harm to the environment. The existing channel is fully lined with concrete, so there is no potential for harm while working within the channel. The Project will not affect the upstream habitat, but will provide access to historical spawning grounds for endangered migrating steelhead. The fish passage channel is designed so that the weirs, and other attachments can be relocated if it is determined that flows need to be adjusted. This can be done at any time after the Project is constructed.</p>
Location of monitoring	<p>Water quality monitoring: current locations are San Jose Creek at Patterson and just north of Hollister Avenue. The City also proposes to take samples of the creek flow at the Goleta Slough. For monitoring fish movements: the City will install a web cam so that CDFG can monitor the creek at any time from any location. There is a large group of volunteer organizations that were part of the fish passage design work group. These include but are not limited to the Audubon Society, the Coastal Conservancy, Santa Barbara Channel Keepers, and the Environmental Defense Council. They will be willing to help with visual monitoring.</p>
Monitoring frequency	<p>For water quality, sampling will be conducted at the current frequency (on the first Sunday of each month). For fish monitoring, the frequency recommended by CDFG will be used. CDFG also will be monitoring fish movement by the web cam.</p>
Frequency of evaluation/analysis of performance measures	<p>The flow regimes will be evaluated during the first storm flows to ensure that the weirs and attachments are properly positioned. Those will be adjusted if necessary and over time, if changes need to be made when appropriate.</p>

EXHIBIT 6.4-2

Project 4 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitoring protocols/ methodologies, including who will perform the monitoring	<p>For a flood control project such as this, the successful conveyance of a 100-year storm will be used for monitoring. The channel will be monitored by City staff during storm events and immediately after storm events to determine whether any debris needs to be cleaned out of the channel. Santa Barbara County Flood Control District conducts upstream trimming and clearing every year before the rainy season begins.</p> <p>For the flow regimes in the fish passage channel, a member of the fish passage design engineering team will come out to the site and evaluate whether weirs need to be re-set. Any necessary changes will be made. Observations of fish movement will help in fine tuning the locations of resting pools. Regular monitoring will be conducted by volunteers from one or more of the environmental groups by people trained to observe fish movement. CDFG will monitor by web cam, and anyone else who is interested will be able to log on to the web cam during migration season. The Project proponent will continue to work with CDFG and NOAA to ensure that the objectives for fish passage are being met.</p>
Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame	<p>The MOU between the City and County will delineate maintenance responsibilities. As for monitoring fish passage, the City will work with CDFG and NOAA each year to define the schedule for fish monitoring. The City will coordinate with volunteer partners to cover the requirement.</p>

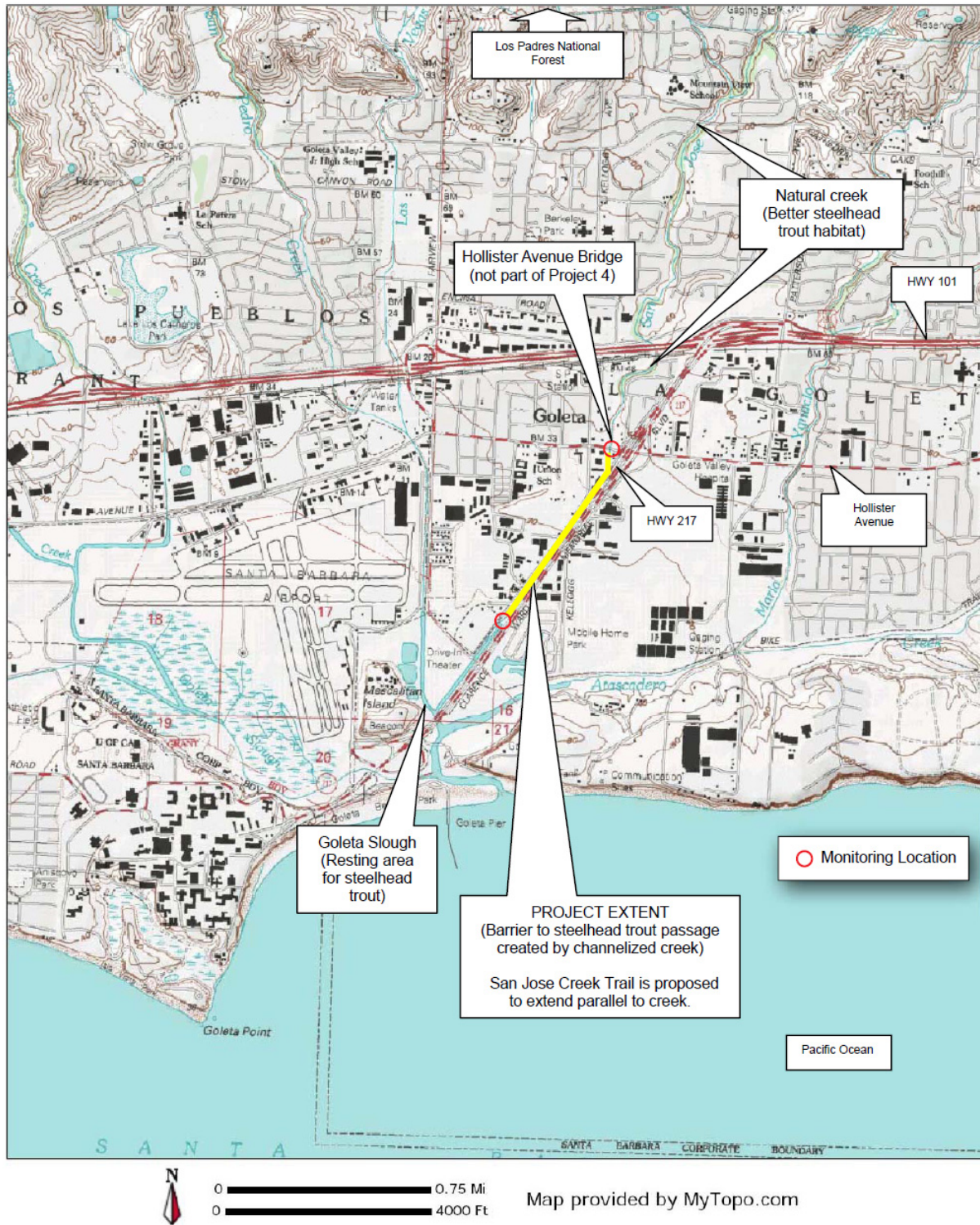
MOU = memorandum of understanding

Map of Monitoring Locations

The Project monitoring locations are indicated on Exhibit 6.4-3. The monitoring locations are on Hollister Avenue, just north of the Hollister Avenue Bridge, and at the downstream end of the San Jose Creek Channel. The photo below shows the Project area just above the wet channel to the left of the bend in Highway 217.

EXHIBIT 6.4-3

Project Location and Monitoring Locations



PROJECT 5:

**Central Coast Water Authority,
Water Supply Reliability and Infrastructure Improvement Project**

Project 5: Central Coast Water Authority (CCWA) Water Supply Reliability and Infrastructure Improvement Project

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the CCWA, Water Supply Reliability and Infrastructure Improvement Project (Project 5 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California.

The purpose of this section is to provide information that would be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures

Exhibit 6.5-1 provides a summary of monitoring, assessment, and performance measures of Project 5. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project

EXHIBIT 6.5-1

Project 5 Summary of Monitoring, Assessment, and Performance Measures



Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 <p>Protect pipeline from potential damage to ensure uninterrupted delivery operations.</p>	Pipe lowered and encased in concrete, to provide required pipe strengthening element and to avoid stresses associated with water impacts on side of pipe.	No pipeline failures.	No failures. The Project is designed to prevent damage and catastrophic break.	Flowmeters, leak detection, monitoring of pipeline.	All water delivery requests by CCWA South Coast participants are satisfied. No failures. No service interruptions.

EXHIBIT 6.5-1

Project 5 Summary of Monitoring, Assessment, and Performance Measures

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Remove pipe obstruction, which is causing fish passage issue in San Lucas Creek during low- and medium-flow events.	No San Lucas Creek Channel obstruction by CCWA pipeline.	No San Lucas Creek Channel obstruction by CCWA pipeline. No exposure of pipe in creek channel.	No San Lucas Creek Channel obstruction by CCWA pipeline. Observation of fish upstream of former obstruction.	Quarterly inspection of pipeline right-of-way.	No San Lucas Creek Channel obstruction by CCWA pipeline. No exposure of pipe in creek channel.

The output indicators (for example, no pipeline failures), will effectively track the Project performance and the output of the Project. The outcome indicators (for example, protection of the pipeline from potential damage to ensure uninterrupted delivery operations) are adequate to evaluate the Project goal.

Consistency with Basin Plan

The Project is consistent with the Basin Plan in that it does not negatively affect water quality. The objective of the Basin Plan is to show how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible.

Project 5 ensures reliable delivery of high-quality SWP water to Santa Barbara County South Coast Water Agencies. As a result of avoiding an interrupted supply of imported SWP to the region, Project 5 may lead to several long-term water quality benefits. Through augmenting water rights releases from Bradbury Dam, the groundwater basins along the Santa Ynez River are recharged with high-quality water. Through the uninterrupted importation of SWP water to the region, the groundwater basins are operated conjunctively, thus their respective sustainable yields are increased. In addition, through connecting the region to the SWP water via the CCWA pipeline, participation in groundwater banking operations located outside of the areas becomes another option for water supply, thus increasing the overall reliability of water supply.

Monitoring Plan

CCWA staff would closely monitor the pipeline integrity through (1) routine cathodic testing, (2) pipeline right-of-way inspections, (3) reconciling delivery volumes recorded at the pumping plant flowmeter and recorded at the Bradbury Dam outlet works flowmeter, and (4) hydrostatic testing during periods of pipeline inactivity.

The detailed final design will include a comprehensive construction quality control quality assurance (QA/QC) program. The program will include material submittal review and specific field testing of completed works. In addition, the final design and construction documents will include requirements for contractor compliance with an environmental monitoring and clearance program, as well as a health and safety program.

Exhibit 6.5-2 provides a summary of the monitoring plan including monitoring protocol, data management system, and quality control data of Project 5.

This table summarizes the following information:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Reviewing data with the monitoring compliance protocol per Project implementation schedule

EXHIBIT 6.5-2

Project 5 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitored parameters	Examine pipeline integrity; Cathodic testing stations; pipeline right-of-way; flowmeter for measuring delivery volumes; pressure meter for hydrostatic testing; erosion of repaired pipe sections.
Location of monitoring	Along the pipeline and surrounding right-of-way at Site No. 1 and No. 2, as shown in Exhibit 6.5-3
Monitoring frequency	Routine monitoring; annual inspection of right-of-way for evidence of leakage; annual review of flow records; pressure monitoring for 2 to 4 weeks annually; inspection of repair after large storm events/spills.

EXHIBIT 6.5-2

Project 5 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitoring protocols/ methodologies	<p>Routine cathodic testing – CCWA staff will routinely monitor the existing Cathodic Testing Stations located along the pipeline. An established monitoring protocol will be utilized for collected the field data. Essentially, each test station is used to monitor the electric potential between the steel of the pipe to a portable reference probe inserted into the ground. These measurements will be documented and submitted for review by CCWA's Corrosion Engineering Consultant. The consultant will interpret the data to determine if there is evidence of corrosion.</p> <p>Pipeline right-of-way inspections – CCWA staff will inspect the pipeline right-of-way. This will provide an opportunity to observe any evidence of pipeline leakage or erosion of soil from above the pipeline. The inspection will be completed on a quarterly basis, and the inspection observations will be documented.</p> <p>Reconciling delivery volumes recorded at the pumping plant flowmeter and recorded at the Bradbury Dam outlet works flowmeter – There is a flowmeter located at the start and at the end of the SYII pipeline. CCWA will periodically (at least annually) review the flow records for evidence of pipeline leakage.</p> <p>Hydrostatic testing during periods of pipeline inactivity – The CCWA pipeline operations shuts down for 2 to 4 weeks during November of each year due to the DWR planned winter maintenance outage. During this period of inactivity, the pipeline will be isolated by closing valve at the Bradbury Dam outlet works and at the Santa Ynez Pumping Plant. The pressure will be monitored continuously and the data will be reviewed for evidence of leakage.</p> <p>Inspect the repaired areas after all large spill events – After large spills, the repaired pipe sections will be inspected for evidence of erosion.</p>

EXHIBIT 6.5-2

Project 5 Summary of Monitoring Plan

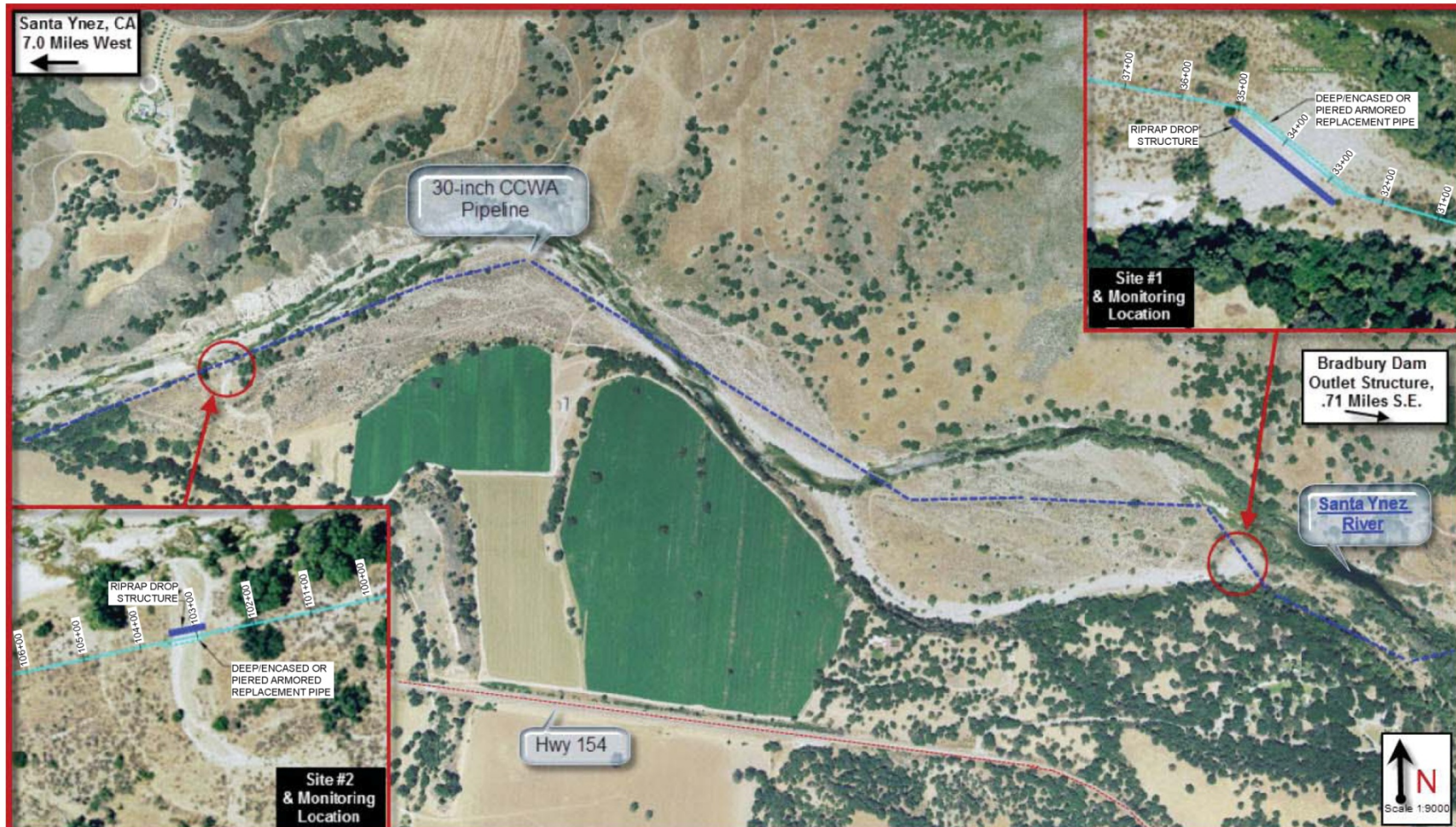
Monitoring Plan Features	Monitoring Plan Details
Data and Task Scheduling Management	<p>Preventative Maintenance Management System - CCWA utilizes a Preventative Maintenance Management System to schedule and document period tasks. The specific software currently used by CCWA is FastMaint. For all of the Project monitoring programs, a task will be entered into the FastMaint software. The task will identify a responsible employee, required resources, and the schedule. If merited, specific work instruction will also be included. The software will notify the responsible employee when the task is scheduled through automatically issuing a Work Order. The employee will execute the task and complete all required documentation. The completed Work Order will subsequently be entered into the FastMaint software for storage. This system also always Work Orders to be issued for unscheduled events, such as a spill event form Bradbury Dam.</p> <p>FastMaint not only issues Work Orders to the responsible employees, but also notifies the supervisor of the employee. The annual performance evaluation of the employee and their supervisor includes review their efforts to comply with FastMaint Work Order requirements.</p> <p>Other databases are maintained specific to the task. These other databases include:</p> <ul style="list-style-type: none"> - All cathodic test station readings are maintained in an Excel spreadsheet. This data is review by CCWA's Corrosion Engineering Consultant. - All Inspection reports are stored in CCWA's Document Management System. This system retains a permanent record of each document, including date of generation, document versions, and document activity such as viewing or printing. A specific folder has been set up for the SYII pipeline reach with subfolders for each of the above described monitoring programs.

DWR = Department of Water Resources

Map of Monitoring Locations

EXHIBIT 6.5-3

Location of Pipeline Repair and Monitoring Sites



PROJECT 6:

Goleta Sanitary District, Wastewater Treatment Plant Upgrade

Project 6: Goleta Sanitary District, Wastewater Treatment Plant Upgrade

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the Goleta Sanitary District (GSD), Wastewater Treatment Plant Upgrade (Project 6 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California.

The purpose of this section is to provide information that would be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures

Exhibit 6.6-1 provides a summary of monitoring, assessment, and performance measures of Project 6. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

EXHIBIT 6.6-1

Project 6 Summary of Monitoring, Assessment, and Performance Measure





Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Improve water quality	Decrease TSS concentration of treated wastewater	TSS concentration	Laboratory testing of final effluent prior to discharge to the ocean	Standard methods for the sampling and analysis of waters and wastewaters	< 30 mg/L TSS
 Improve water quality	Decrease BOD concentration of treated wastewater	BOD concentration	Laboratory testing of final effluent prior to discharge to the ocean; samples per permit	Standard methods for the sampling and analysis of waters and wastewaters	< 30 mg/L BOD

EXHIBIT 6.6-1

Project 6 Summary of Monitoring, Assessment, and Performance Measure

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Increase reliability for recycled water use	More reliable water source acceptable for recycled water use	Water quality in effluent meets standards for tertiary reclaimed water treatment	Laboratory testing of final effluent for reuse and treatment	Standard methods for the analysis of waters and wastewaters and flow/volume measurements	Meet the water reuse standards
 Reduce green house gas and other air quality pollutant emissions	Replace outdated and aged equipment	Reduced emissions	Equipment replaced; Tier 0 emergency generators replaced with Tier 2 generators, designed to meet industry air emission standards per APCD regulations; new digester flare constructed	Standard methods for the analysis of air quality per APCD Authority to Construct permit; daily monitoring of H ₂ S concentrations off of the digesters	Meet APCD air quality regulatory requirements for H ₂ S concentrations off of the digesters: < 239 ppm H ₂ S

APCD = Air Pollution Control District

BOD = biochemical oxygen demand

H₂S = hydrogen sulfide

ppm = parts per million

TSS = total suspended solids

The output indicators (for example, qualitative measurements of concentrations of TSS and BOD; volume of wastewater discharged to the ocean; and reduced H₂S and greenhouse gas emissions) will effectively track the Project performance and the output of the Project. These indicators are adequate to evaluate change in water quality and quantity, as well as air quality, resulting from this Project. The upgraded WWTP will treat 100 percent of the wastewater flow from Goleta Valley to the full secondary treatment level, thereby improving the water quality of both the effluent being discharged and the receiving ocean waters. Upon completion of the Project, the plant will operate under a full secondary National Pollutant Discharge Elimination System (NPDES) permit. The Project will be monitored to comply with all applicable permit requirements. The entire NPDES monitoring and permitting program is based on

laboratory testing of the raw and treated wastewater and is included in Appendix 3-6 of Attachment 3, Work Plan.

The APCD Authority to Construct (ATC) permit is included in Appendix 3-6 of Attachment 3, Work Plan, which details the air quality monitoring methods and air emission limits, including the requirements for monitoring H₂S concentrations off of the digesters and a description of the outdated equipment to be replaced. Additional air quality monitoring requirements for this Project are discussed in the Mitigated Negative Declaration, which is also included in Appendix 3-6 of Attachment 3, Work Plan.

It is feasible that the Project targets will be met within the life of the proposal. As required by the settlement agreement, technology used in this Project is standard for the industry, reliable, and well-tested to achieve full secondary treatment results.

Consistency with Basin Plan

The Project is consistent with the Basin Plan in that it does not negatively affect water quality. The objective of the Basin Plan is to show how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible.

Project 6 positively affects water quality in a number of ways. Construction of the aeration basin and secondary clarifiers will allow GSD to treat 100 percent of its flow to the full secondary treatment level, achieving a higher level of wastewater treatment that can improve the water quality of the surrounding ocean waters and can effectively be sent to GWD's water reclamation facility. The full secondary treated discharge will have lower concentrations of solids and organic/inorganic compounds, thus improving the quality of treated effluent discharge as well as the water quality of the receiving ocean waters.

Monitoring Plan

Exhibit 6.6-2 provides a summary of monitoring plan including the following:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Quality control of data
- Reviewing data with the monitoring compliance protocol per schedule of the implementation of the Project

EXHIBIT 6.6-2

Project 6 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitoring Parameters	<p>Water quality and quantity measurements:</p> <ul style="list-style-type: none"> ▪ Concentration of TSS in the final effluent being discharged to the ocean ▪ Concentration of BOD in the final effluent being discharged to the ocean ▪ The total amount/volume of treated wastewater being discharged to the ocean ▪ Air quality measurements: ▪ Concentration of H₂S off of the digesters
Measures to remedy or react to problems encountered during monitoring	<p>Monitoring occurs at various stages of the wastewater treatment process; for example, both TSS and BOD are measured:</p> <ol style="list-style-type: none"> 1. as the wastewater enters the plant (Influent) 2. after primary treatment stage (Primary) 3. after biofilter treatment stage (Biofilter) 4. after secondary treatment stage (Secondary) <p>Note that problems detected before the final stage of treatment are corrected at the suitable point of treatment process.</p>
Location of monitoring (the locations where the data will be collected)	<p>Monitoring is performed at:</p> <ol style="list-style-type: none"> 1. Influent 2. Primary Effluent 3. Biofilter 4. Secondary Effluent 5. Final Effluent 6. Digesters (air quality only) 7. Receiving water body, as shown in Exhibit 6.6-3
Monitoring frequency	<p>5 out of 7 days (water quality and quantity);</p> <p>APCD Authority to Construct permit requires daily monitoring of H₂S concentrations off the digesters</p>
Frequency of evaluation/analysis of performance measures	<p>Each time, samples are analyzed and results are validated for 5 out of 7 days</p>
Monitoring protocols/ methodologies, including who will perform the monitoring.	<p>GSD staff will collect and analyze samples using standard methods for the analysis of waters and wastewaters. Monthly NPDES monitoring reports submitted to the RWQCB. Air quality monitoring requirements are outlined in the APCD ATC permit, included in Appendix 3-6 of Attachment 3, Work Plan.</p>
Data Management System	<p>Electronic reporting is conducted by CIWQS</p>

Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame.

NPDES discharge permit from RWQCB and follow-up monthly reports via CIWQS. Procedures as outlined in the APCD ATC permit for air quality monitoring.

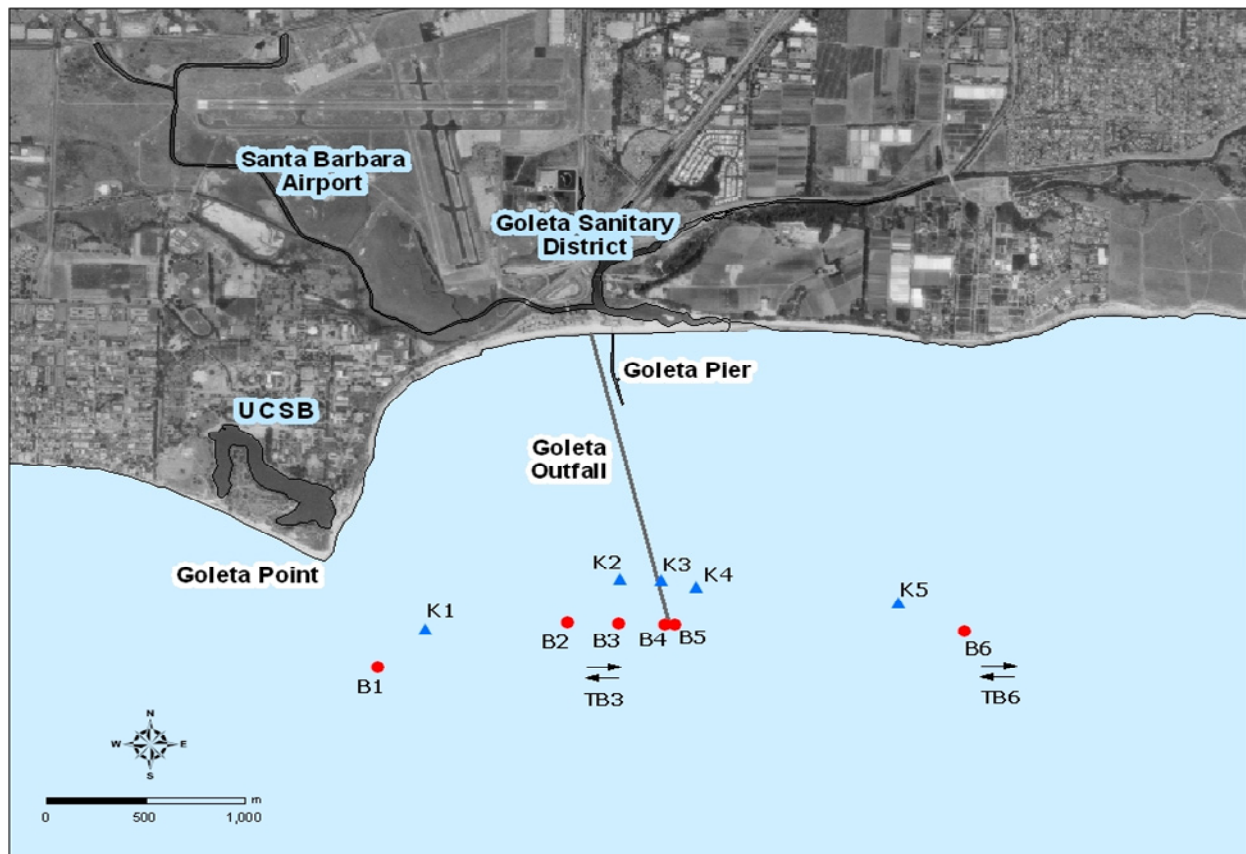
GSD operates from sewer service charges collected from treatment plant users. To meet the requirements of the permit, the District will use its resources to maintain monitoring of the Project throughout the monitoring time frame.

Map of Monitoring Locations

Exhibit 6.6-3 illustrates the receiving ocean water monitoring locations surrounding the GSD ocean outfall discharge pipeline. Stations B1 through B6 are located at the 60-foot depth contour line. Stations K1 through K5 are located at the historical kelp bed depth equal to the 30-foot depth contour line. B6 is the reference station and TB3 and TB6 are the annual trawl location sites.

EXHIBIT 6.6-3

GSD Outfall and Water Monitoring Locations



PROJECT 7:

City of Guadalupe, Recycled Water Feasibility Study

Project 7: City of Guadalupe, Recycled Water Feasibility Study

This section presents the planned Project monitoring, assessment, and performance measures that will demonstrate that the City of Guadalupe (City), Recycled Water Feasibility Study (Project 7 or Project) will meet its intended goals, achieve measurable outcomes, and provide value to the State of California. The purpose of this section is to provide information that would be used in the monitoring plan for the Project.

Monitoring, Assessment, and Performance Measures


Exhibit 6.7-1 provides a summary of monitoring, assessment, and performance measures of Project 7. The intent of this table is to describe the performance measures that will be used to quantify and verify Project performance with respect to the Project benefits or objectives. The purpose of this section is to provide information for the following:

- Output indicators that will be used to track output
- Outcome indicators to evaluate change that is a direct result of the Project
- Output indicator data collection procedure/methodology
- Measurable targets that are feasible to meet during the life of the Project

This information will be ultimately used for the monitoring plan for the Project.

EXHIBIT 6.7-1

Project 7 Summary of Monitoring, Assessment, and Performance Measures

Project Goal	Desired Outcome	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
 Implementable Planning Tool for Recycled Water Infrastructure planning	Determine water reuse feasibility	End users identified Cost-benefit ratio identified	Feasibility determination to supply recycled water to the City of Guadalupe and surrounding property owners; identification of required recycled water distribution facilities.	After the feasibility of the use of recycled water is established, development of a subsequent multiphased infrastructure project for the treatment and distribution of reclaimed water to City customers and potentially to customers beyond the City's limits.	Completed recycled water feasibility study as described in the work plan.

The output indicators (for example, identifying sets of potential customers and conducting a cost-benefit analysis with distribution system alternatives) will establish the feasibility of the Project. These indicators will effectively track the Project

performance and the output of the Project. If this study justifies the use of reclaimed water, then there would likely be a subsequent multiphased infrastructure project for the treatment and distribution of reclaimed water to City customers and potentially to customers beyond the City's limits.

It is feasible that the Project targets will be met within the life of the Proposal.

Consistency with Basin Plan

The Project is consistent with the Basin Plan in that it does not negatively affect water quality. The objective of the Basin Plan is to show how the quality of the surface water and groundwater in the Central Coast Region should be managed to provide the highest water quality reasonably possible.

Project 7 will positively affect water quality in a number of ways. Not only would the potential upgrade to tertiary treatment allow the City's WWTP to meet Title 22 requirements for improved water quality, the use of this higher-quality recycled water to irrigate food crops, parks and playgrounds, school yards, and residential landscapes would result in the percolation of higher-quality water back into the groundwater basin. Furthermore, the use of recycled water for groundwater recharge may have the potential to improve groundwater quality.

Monitoring Plan

Exhibit 6.7-2 provides a summary of the monitoring plan including measurement parameters, measurement frequency, data management system, quality control of data, and the regulatory compliance measures of Project 7.

This table summarizes the following information:

- Monitoring parameters that will be used to track output
- Frequency and location of measurements to evaluate compliance and change of parameters that is a direct result of the Project
- Data management procedure/methodology
- Reviewing data with the monitoring compliance protocol per schedule of the implementation of the Project

EXHIBIT 6.7-2

Project 7 Summary of Monitoring Plan

Monitoring Plan Features	Monitoring Plan Details
Monitored parameters	The City Engineer will be monitoring progress on the generation of the Study through a Project tracking sheet, which will allow for the overall tracking of potential issues, record how they have been addressed by the consultant, outcomes, quality of deliverables, and alignment with the agreed upon timetable and milestones.
Measures to remedy or react to problems encountered during monitoring.	Should problems arise due to budget, schedule/timeline, the City Manager will address these immediately with the consulting firm pursuant to the Project tracking sheet.
Location of monitoring	Not applicable.
Monitoring frequency	The City Manager will be in weekly contact with the consulting firm through e-mails or conference calls, or both. The presentation of the final report will be made to City Council.
Frequency of evaluation/analysis of performance measures	Per the executed grant agreement, the City will generate all requisite progress reports, quarterly and final reports, and PAEPs and QAPPs, as necessary and appropriate, in a timely manner.
Monitoring protocols/methodologies, including who will perform the monitoring.	Monitoring of the Study and its progress will be conducted by the City Engineer and City Council, as appropriate. The consulting firm's adherence to the timeline and budget will be used as an indicator of performance. In addition, the consulting firm's adherence to tasks outlines, communication with the City on potential deviations from the agreed upon scope of work, as well as thoroughness and quality of work products will also be used to evaluate Project performance. At the conclusion of each task, a technical memorandum will be provided to the City for review and comment, which is another way of monitoring progress and evaluating the Project.
Data Management System	The Project tracking sheet and performances measures will be documented and stored in the data management system developed by the County and will also be transmitted to DWR in accordance with the grant agreement.
Procedures to ensure the monitoring schedule is maintained and that adequate resources (funding) are available to maintain monitoring of the Project throughout the monitoring time frame.	The City has accounted for staff time and resources and has dedicated them to this Project for the tasks outlined in the work plan.

Map of Monitoring Locations

The type of monitoring identified for Project 7 involves monitoring the progress of the development of the feasibility study; therefore, identification of monitoring locations is not applicable to this Project.